DOI: 10.37102/1992-4429_2021_38_04_05

# ALGORITHM FOR NAVIGATION OF AUV GROUP BASED ON PARTICLE FILTER AND DIFFERENTIAL-RANGING ACOUSTIC POSITIONING SYSTEM

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Group AUV operations found more and more wide expansion because open possibility for new tasks solution and allow enlarge effectiveness of execution for typical missions in comparison with one vehicle operation. Also the AUV group usage provides more high reliability of the operation on the whole by involving some level of superfluity, allowing more quality results and successful decision of current task even in the case of damage situation, for example, out of order for one or more AUVs. Navigation of the AUV group operation supposes simultaneous position detection for all AUV in the group. Asynchronous acoustic positioning systems with long base line fulfill positioning of separate AUV by turns and can not solve the navigation task simultaneously for all vehicles in the group. Synchronous acoustic positioning systems demand expensive precise systems of time to provide the needed precision of navigation. In the paper the task of AUV group navigation with help of the differential-ranging acoustic positioning system with long base line is considered. The algorithm for solution of navigation task for differential-ranging acoustic positioning system based on use of particle filter is described. The results of computer simulation for algorithm operation are supplemented that prove its effectiveness.

**Key words**. AUV group navigation, long base line acoustic positioning system, differential-ranging acoustic positioning system, particle filter.

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**Recommended citation:**

Shcherbatyuk D.A. ALGORITHM FOR NAVIGATION OF AUV GROUP BASED ON PARTICLE FILTER AND DIFFERENTIAL-RANGING ACOUSTIC POSITIONING SYSTEM. Underwater investigation and robotics. 2021. No. 4(38). P. 50–59. DOI: 10.37102/1992-4429_2021_38_04_05.